

REMARKS

Claim 14-21 and 23-28 are presently pending and stand rejected.

Rejection Under 35 U.S.C. § 112

Claim 23 was rejected under the second paragraph of 35 U.S.C. § 112 in that it was unclear whether “a gas concentration threshold” stated in that claim was the same as the “gas concentration” recited in claim 14. In response, claim 23 has been amended to change “a gas concentration threshold” to --the threshold level--, thereby properly referring to the threshold level introduced in claim 14. Claim 23 was further rejected in that it is unclear whether the “broadcast signals” includes the “a broadcast signal” stated in claim 14. In response, claim 23 has been amended to refer to this as --the broadcast signal--, thereby referring back to that term in parent claim 14.

Claim 27 was also rejected under the second paragraph of 35 U.S.C. § 112 as allegedly being unclear whether “a standard data signal” was one of the “standard data signals” stated in claim 14. In response, claim 27 has been amended to state that “the broadcast signal has a greater signal strength than the standard data signals.” This clarifies reference back to the standard data signals introduced in parent claim 14.

These changes to the claims overcome the rejections under 35 U.S.C. § 112.

Rejection Under 35 U.S.C. §103

Claims 14, 15, 17, and 23-25 were rejected under 35 U.S.C. § 103 as unpatentable over U.S. Patent Application Publication 2001/0040509 to Dungan and U.S. Patent Application Publication 2001/0038336 to Acevedo.

Claim 1 specifies that when a gas concentration exceeding a threshold level is detected, the sensor module transmits a broadcast signal to the display module and a plurality of other identical display modules. In this situation, all the nearby display modules receive that warning thereby providing a wide range alert.

The Dungan reference describes a gas monitoring system which has a number of sensors remotely located around the outside of a chemical plant for relaying information to a central control center 18 (paragraph 0005). In the event of a toxic gas leak, this enables people downwind to be warned (paragraph 0005, last sentence). While some of the sensors can be connected by wires to the control center, because many are located a considerable distance from the plant, radio or satellite signals are used to send data from the sensors to the control center (paragraphs 0059-0060). Either way, the patent teaches that each gas sensor transmits a signal directly to the central control station 18 which, depending upon the toxic gas concentration, enables control center personnel to take suitable action (paragraph 0014-0015). For that purpose, an alarm 19 is activated to alert such personnel.

Because the gas sensors are distributed over a very large geographical area and because the patent teaches the need only to alert people downwind of the chemical plant, there is no suggestion of a need to activate alarms at all the sensor stations. In fact, doing so would needlessly alarm residents upwind of the plant who would not be affected by the gas release. Furthermore, any need to provide a more wide range alarm broadcast could be determined by the personnel at the central control center. Therefore, nothing in Dungan suggests a need for transmitting a signal directly between all the sensor modules.

The Acevedo patent teaches a wireless smoke detection system for use within a building and the rejection contends that on the basis of this reference, it would be obvious for a sensor module to broadcast a signal the other sensor modules in the Dungan gas monitoring system. Because the Acevedo patent relates to a smoke detection system which detects a fire within a building, it stands to reason that all the alarm units within the building should be activated to evacuate the building. This is in contrast with respect to the gas concentration system in Dungan where the gas sensors are spread over a large geographical area outside the building and in which a gas concentration in one adjacent neighborhood would not require evacuation of other neighborhoods upwind of the building. As a consequence, the motivating factor for transmitting an alarm signal to every smoke detector within a building does not apply to the Dungan system and in fact would needlessly alarm people in neighborhoods unaffected by the gas leak. Furthermore, broadcasting signals to multiple display devices in Dungan would eliminate the ability for supervisory personnel at the control center to properly assess the gas leak and control the responsive action. This human assessment is fundamental to the Dungan system. In other words, one could not equate a fire monitoring system for inside a home as in Acevedo with a monitoring system for a large geographical area surrounding a chemical plant as in Dungan.

Because of these distinctions, it would not be obvious to modify the Dungan system to provide circuitry at every sensor station 14 that would automatically respond to an signal being transmitted from anyone of them. As a result, the references do not suggest the subject matter of the presently pending claims and claims 14,15, 17 and 23-25 are patentable under 35 U.S.C. §103

Claim 16 was rejected under 35 U.S.C. §103 as being unpatentable over the Dungan and Acevedo patent applications and further in view of Lovejoy *et al.*

As noted above, it would not be obvious to modify the Dungan system according to the teaching in Acevedo. Specifically the significant differences between those systems and the express teachings of Dungan regarding central control, one skilled in the art of gas concentration monitoring would not modify the Dungan system by broadcasting a signal from one sensor module to the display module and a plurality of other display modules when a threshold gas concentration is exceeded.

Lovejoy *et al.* likewise merely sends signals from the sensor unit 10 to a central computer 140, but not directly to other sensor modules (see Figure 3). Therefore the additional disclosure from this patent does not cure the teaching deficiency in Dungan.

As a result, the combined teachings of Dungan, Acevedo and Lovejoy *et al.* do not render claim 16 obvious under 35 U.S.C. §103.

Claims 18 and 19 stand rejected under 35 U.S.C. §103 as being unpatentable over the Dungan and Acevedo patent applications and further in view of Lovegreen *et al.*

As stated above regarding base claim 17, it would not be obvious to modify the Dungan system according to the teaching in Acevedo so that multiple sensor modules in Dungan receive gas concentration signals directly from other sensor modules.

Lovegreen *et al.* relates to a battery charger and does not mention a gas monitoring apparatus. Thus combining these references' teachings does not suggest the fundamental concept in base claim 14 of a sensor module transmitting a broadcast signal to multiple display modules. Therefore, claims 18 and 19 are patentable under 35 U.S.C. §103.

Claims 20-21 stand rejected under 35 U.S.C. §103 as unpatentable over Dungan, Acevedo, and Lovegreen *et al.* and further in view of Saaski, *et al.*

As noted immediately above, Dungan, Acevedo, and Lovegreen *et al.* fail to suggest the basic concept of a sensor module transmitting a broadcast signal to multiple display modules when the detected gas concentration exceeds a threshold level. Saaski, *et al.* teaches a rechargeable hearing aid and thus does not teach the specific broadcast signal transmission for a gas sensor that is lacking in the other references. Thus, combining these four references does not render the claimed subject matter obvious under 35 U.S.C. §103.

Claim 26 was rejected under 35 U.S.C. §103 as being unpatentable over Dungan and Acevedo patent applications, and further in view of Kitaguchi *et al.*

Here too, the unlikely combination of the teachings in Dungan and Acevedo fails to suggest a sensor module in Dungan broadcasting a signal to multiple display modules when the detected gas concentration exceeds a defined threshold level.

That deficiency is not cured by the teaching in Kitaguchi *et al.* Claim 1 of Kitaguchi *et al.* cited in the rejection states that a radiation dose meter sends its data to a central station that processes that data to determine if a hazardous condition exists. If so, the central station activates a user display. Thus unlike the presently claimed gas monitoring apparatus, the central station, not the sensor module, determines when a threshold level is exceeded, in which case a display is activated. In addition, just like Dungan, the Kitaguchi *et al.* sensor module only communicates with the central station and does not transmit a broadcast signal directly to a plurality of display modules. This further evidences the incompatible nature of the Acevedo smoke detectors with these central control station systems.

For these reasons, the combined teachings of Dungan, Acevedo, and Kitaguchi *et al.* do not render the subject matter of 26 obvious under 35 U.S.C. §103.

Claims 27 was rejected under 35 U.S.C. §103 as being unpatentable over the Dungan and Acevedo patent applications and further in view of Leedom, Jr.

As noted in respect of base claim 14, Dungan and Acevedo fail to suggest the basic concept of a sensor module transmitting a broadcast signal to multiple display modules when the detected gas concentration exceeds a threshold level.

It is clear that the Leedom, Jr. patent was selected solely because it mentions using different broadcast signal strengths, however other than that it has nothing in common with the other references. The latter patent relates to integrating a plurality of wireless communication networks having different protocols (column 1, lines 14-40). This is accomplished with the wireless communication networks using different communication modes and operating at different broadcast strengths to form tiers of successively greater effective broadcast areas (claim 1). At best the Dungan and Acevedo systems each have a single communication network and thus Leedom, Jr. teaching different networks operating at different broadcast strengths is inapplicable to the Dungan and Acevedo systems.

Furthermore Leedom, Jr.'s different networks operating at different broadcast strengths does not suggest the same sensor module transmitting at different signal strengths depending upon the type of signal being sent as in claim 27. Thus any reasonable combination of these references does not render claim 27 unpatentable.

Claim 28 has been rejected under 35 U.S.C. §103 as being unpatentable over the Dungan and Acevedo patent applications and further in view of Aijala *et al.*

Dungan and Acevedo fail to suggest the basic concept of a sensor module transmitting a broadcast signal to multiple display modules, as in base claim 14.

Aijala *et al.* is totally unrelated to sensors sending signals and thus is incompatible with the teachings of the other two references. Aijala *et al.* pertains to monitoring radio and television broadcast programs (column 1, lines 10-23). Such monitoring determines the rate to charge for commercials based on the size of the program's audience (column 1, lines 24-31). Therefore, encoding a signal with data identifying as a broadcast message in Aijala *et al.* fails to remotely suggest doing that in a gas detection system as in Dungan or as in claim 28.

As a result, claim 28 is patentable under 35 U.S.C. §103.

Conclusion

In view of these distinctions between the subject matter of the present claims and teachings of the cited references, reconsideration and allowance of the present application are requested.

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